

Figure 1 is a line graph titled "Wind speed (m/s) at 10 meters". The y-axis is labeled "U10 (m/s)" and ranges from 0 to 5. The x-axis is labeled "Yearday (2001)" and ranges from 213,445 to 213,470. The graph displays data from various sensors, as indicated by the legend:

- LangeEZ (black line with '+' markers)
- anemmet (red line with '\*' markers)
- esandv (red line with '◇' markers)
- mwco (black line with '△' markers)
- lsk (cyan line with '□' markers)
- SAR\_07 (yellow line with 'X' markers)
- SAR\_Lee (black line with '+' markers)
- SAR\_Pump (pink line with '\*' markers)
- SAR\_35 (cyan line with '◇' markers)

The graph shows that the wind speed is generally higher at the SAR\_35 sensor (around 4.4 m/s) compared to the other sensors (ranging from 2.7 to 4.0 m/s). The wind speed at the SAR\_35 sensor is relatively constant, while the other sensors show more variation.

## ***Joint URBAN-2003***

Work continues on the optimization of the Automated Tracer Gas Analysis Systems (ATGAS) for the Oklahoma City project. Enhancements have been made to significantly speed up analysis time by programming the instrument to prepare for the next sample while the analysis of the previous sample is taking place. This increase in speed has, however, introduced other issues such as personnel keeping track of the increased analyses being performed by all four ATGAS at the same time. Small blue lights were added to each ATGAS to inform the operator at a glance of which instrument is in need of attention (i.e. clips need to be opened, analysis is complete, purging is complete). New temperature sensors are being added to increase the precision of the oven temperature readings. Filters are being added on some of the power supplies on each ATGAS to reduce the noise which was causing problems in the ATGAS analysis. Detection limit studies are being performed to characterize each ATGAS analysis ability (i.e., linearity, limit of detection, drift, valve performance, etc.). The new ATGAS have the advantage of the addition of twelve separate valves to increase analysis flexibility, however, this increased complexity has facilitated the need for increased scrutiny of their performance. The primary focus this month was the analysis of low-level concentration standards and the effect of changing analysis parameters. Small changes were made, and a detection limit study was performed to provide indications of an increase or decrease in analysis performance. Studies will need to be conducted on high level concentration standards to indicate the analysis range and also their effects on the lower concentration standards.

(Debbie@noaa.inel.gov, Roger.Carter@noaa.gov, Shane Beard)

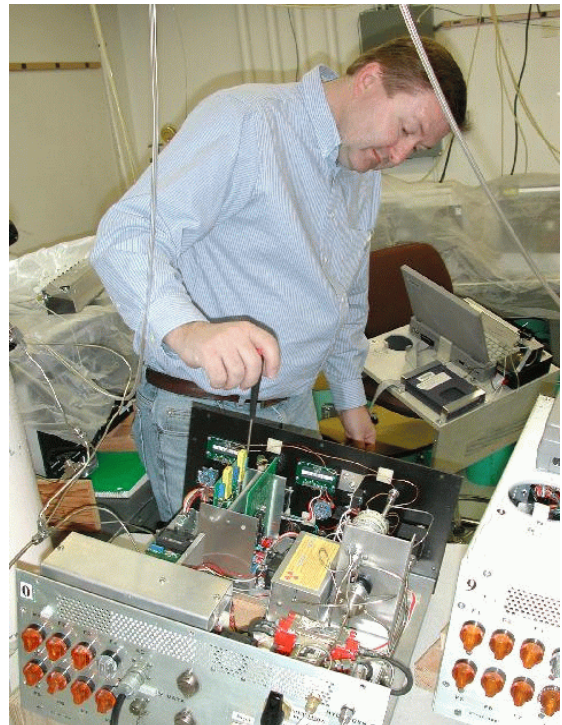


Figure 2. Shane Beard working on enhancements to Automated Tracer Gas Analysis System.

In preparation for the Joint Urban 2003 experiment scheduled for July of 2003, all 10 continuous  $\text{SF}_6$  analyzers have been operated for approximately a week as a preliminary system check out. No problems were discovered with any of the systems. A number of minor modifications have been done to the continuous analyzers since their last deployment. These include the installation of a safer automated cleaning system, audible noise suppression, electrical noise filtering, and ventilation improvements. The new systems worked without a problem during the test.

(Roger.Carter@noaa.gov, Shane Beard)

## ***Rain In Cumulus over the Ocean (RICO)***

NSF accepted the Science Overview Document (SOD) that was refined over the last part of 2002. Also, a deadline of July 1, 2003 was put in place for investigators to submit proposals to NSF for

participation in RICO. Discussion with the radar group at the University of Wyoming is ongoing as to how best to build a case to use the Wyoming King Air and airborne radar for investigating warm rain development in RICO. (Jeff.French@noaa.gov)

### ***BRACE***

FRD has begun analysis of processed CO, SO<sub>2</sub>, and O<sub>3</sub> data received from ARL HQ this month. We have developed MatLab programs to pick out the straight and level tracks from each flight and plot the concentration of these parameters vs. time and position. The programs will be modified to include the nitrogen oxide, formaldehyde, peroxide, and meteorological data and to make 3-D representations of the concentration and concentration ratio data. (tom.watson@noaa.gov)

## **Cooperative Research with INEEL**

### ***Emergency Operations Center (EOC)***

Kirk Clawson and Jeff French participated in an EOC activation exercise on January 22. The scenario involved the Advanced Test Reactor at TRA. The drill used the new hazard assessment of the reactor containment building, which assumes a release of material over a 48-hour time period. This exercise of this scenario gave the FRD team a challenge with the changed release time. (Kirk.Clawson@noaa.gov and Jeff French)

### ***INEEL Support***

Each year FRD compiles joint frequency distributions of the wind at various Mesonet towers for use in INEEL environmental assessments. The wind data from the towers are binned by wind-speed, wind direction, and Pasquill-Gifford stability class. The distributions for Calendar Year 2002 were completed in January and delivered to INEEL. (Richard.Eckman@noaa.gov)

## **Other Activities**

### ***Proposals***

Three full proposals were completed in January. The first one was submitted to the NSF Major Instrumentation Program, with Dr. David McGinnis at Idaho State University as the principal investigator. It proposes to install a meteorological network at Yellowstone National Park to support the wide range of research projects that are taking place in the area. There would be a network of 11 permanent towers near existing facilities at the park, and an additional 20 portable towers that would move around to support specific projects. Some of these projects would be outside Yellowstone in other wilderness areas. The proposed network has the support of the National Park Service, the National Weather Service, and many universities that are engaged in research in the Yellowstone region. (Richard.Eckman@noaa.gov; Dave McGinnis, Idaho State

University)

The second proposal was submitted to the DOE Vertical Transport and Mixing (VTMX) program. The proposed study of turbulence and mixing would take advantage of the existing measurements from the INEEL Mesonet, with some instrument additions to improve measurements of the vertical velocity component. Three areas of focus are proposed: the formation and breakup of cold pools in the Eastern Snake River Plain (ESRP), the interactions of flows exiting tributary valleys with the main flow in the ESRP, and the effects of terrain-generated convergence on air quality. This project would span a three-year period. Discussions have been held with the National Weather Service Field Office in Pocatello and Idaho State University on possible collaborations if the project is funded. (Richard.Eckman@noaa.gov)

The third proposal was also submitted to the DOE Vertical Transport and Mixing (VTMX) program that will obtain measurements of SF<sub>6</sub> during a series of tracer experiments for the next VTMX field campaign. Tracer measurements provide the integrated effect of various transport and mixing processes associated with the valley circulations that cannot be obtained in any other way. By measuring concentrations of SF<sub>6</sub> at the surface and aloft, the overall effect of these processes on pollutant transport and mixing will be quantified. These tracer experiments are to support a companion proposal by Jerome Fast of PNNL that will 1) quantify the relative role of vertical advection and turbulent motions on the vertical mixing of trace gases during stable conditions and 2) determine how multi-scale flows interact to either enhance or suppress the mixing of trace gases within the valley atmosphere at night. Together with PNNL, we hypothesize that mean vertical velocities and turbulent motions in a valley at night are large enough to transport a significant amount of pollutants from surface sources above the strongly stable layer. An accurate representation of the four-dimensional dynamic and thermodynamic fields in areas of complex terrain is needed to examine this issue. The proposed research effort requires several types of supporting instrumentation and the joint efforts of many researchers, including the measurements we describe. (Kirk.Clawson@noaa.gov)

### ***Aircraft Research Initiatives***

The current status of the initiatives is:

*Weather Research Flux Aircraft Initiative.* This initiative has been grouped with other initiatives dealing with the hydrologic cycle. They will be incorporated into a single, unified initiative for submission in the FY '06 budget cycle.

*Carbon Cycle Aircraft Initiative* This initiative has not been included specifically in the proposal to be sent forward to the next level of review. The team lead, David Hoffmann, did however promise that there would be some funding available for participation in a Carbon Cycle field campaign to be held in summer 2005. David wrote:

“In view of your possible participation in the planned FY05 NACP intensive, I feel that some funds could be allocated to your proposed work with the desire that you would attempt to leverage additional funds from ARL, NASA, DOE, or other sources for your participation. I will try to find room for about \$200k in FY05, with outyear

increases (depending on progress) in the neighborhood of 200k per year.”

*Airborne Estuary Flux and Salinity Measurements Initiative.* The deposition initiatives have been grouped together and will move forward.

Full text of the initiatives as well as “White Papers” on the Weather Research and Carbon Cycle research initiatives are available at <http://arlaircraft.noaa.inel.gov> under the Programs button. (tom.watson@noaa.gov)

### ***Air Quality Forecasting Initiative***

A group has been assembled from OARHQ, ARL, AL, ETL, FSSL, and others to write a budget initiative for a NOAA Air Quality Forecasting program. The initiative is for \$6 M/year for the next 5 years. ARL will focus on a section dealing with development of observation systems and networks to provide initialization of forecast models and for process studies. Two conference calls have been held to work on an outline and a writing meeting will be held in Silver Spring on February 19. (tom.watson@noaa.gov)

### ***Safety***

The draft NOAA Environmental Compliance and Safety (ECS) Strategic Plan was received and reviewed; appropriate comments were provided. (Debbie.Lacroix@noaa.gov)

The ECS representative in OAR was provided with a projection of our environmental compliance and safety needs through 2010. (Debbie.Lacroix@noaa.gov)

An ergonomics training session was scheduled to be conducted this coming February 26<sup>th</sup> and 27<sup>th</sup>. The instructor will be an ergonomics expert from the INEEL. (Debbie.Lacroix@noaa.gov)

### ***Papers***

Tami Grimmert is preparing to present a paper at the 83rd American Meteorological Society Annual Meeting and the Twelfth Conference on Interactions of the Sea and Atmosphere. The meeting will be held February 10-13, 2003 in Long Beach, California. She will also be attending a short course entitled "Remote Sensing Methods and Applications in Air-Sea Interaction" on February 9. (Tami@noaa.inel.gov)

### ***Travel***

Paula Fee traveled to Boulder, CO, Jan. 21-23, 2003, for the Budget Operating Plan (BOP) training. While in Boulder, she met with numerous MASC personnel and the administrative staff at CMDL and ARL's SRRB.

Jerry Crescenti to Boulder, Colorado, on January 27-29 for the CBlast-Low Planning Meeting.

### ***Training***

On January 14, 2003, Jerry Crescenti attended a 4-hour training on “Technical Writing for Scientists and Engineers” at Bechtel-Idaho.

Paula Fee attended the NOAA CAMS Budget Execution Training on Budget Operating Plan (BOP) in Boulder, CO Jan. 21-23, 2003. She will be ARL’s Dee Dee Mitchell’s back up for entering BOPs into the CAMS System for ARL and it’s Field Offices. The BOPs are used within CAMS to plan for commitment and obligation of resources.

### ***Visitors***

Randy Johnson and Shane Beard hosted a crew of four from Dugway Proving Ground on January 22. The group, headed by Kevin Wilcock, conferred on efforts to build a SF<sub>6</sub> release mechanism to be used unattended in South Korea.